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10/580,156	05/19/2006	Toshihiro Tomita	65632 (71719)	8056

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EXAMINER	
KHANNA, MADHU	

ART UNIT	PAPER NUMBER
2451	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,156	TOMITA ET AL.	
	Examiner	Art Unit	
	MADHU KHANNA	2451	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to claims 1 and 3-16 filed on 03/12/2009.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: An industrial automation control system for controlling and monitoring of a plant.

Response to Arguments

3. In response to applicant's arguments, the recitation "An industrial automation control system...for controlling and monitoring of a plant" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

4. Applicant's arguments with respect to claims 1, 3-14 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically:

5. Claim 1 recites the limitation "the generated global address" in first limitation and “the whole control system” in the second limitation. There is insufficient antecedent basis for these limitations in the claim.

6. The term "more appropriate” in claim 15 is a relative term which renders the claim indefinite. The term "more appropriate" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

7. Claim 15 recites a “control function by performing transmission and reception to and from the sensor *and* the actuator”. However, the previous limitation of the claim recites “at least one of a sensor and an actuator”, interpreted as not requiring both to be present in the system.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1, 3-9, 11, 12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. (US 2001/0042118) in view of Forslöw (US 6,954,790) and in further view of Petite et al. (US 7,053,767).

Regarding claim 1, Miyake teaches an industrial automation control system established through a network for controlling and monitoring of a plant, the control system comprising:

a management node (31, 32, and 33 of FIG. 3) for monitoring and operating the system component nodes (34 of FIG. 3) through the network and managing control of the whole control system (FIG. 3 generally illustrates the configuration of a network operation/management system, [0088]), wherein the management node includes:

a communication section for performing communication through the network (e.g. a communication I/O interface controller 614, [0100]);

a storage section for storing definition information of the system component nodes (device setting information) (e.g. 321 of FIG. 3, [0088]);

a display section for displaying an operation and monitor screen (e.g. display device 56 of FIG. 5, [0099]);

a definition information generation section (device control procedure creating module 324, [0096]) for generating the definition information (device setting information) based on the global address (object ID, [0118]), the attribute information (e.g. types of the devices, [0103]) and the position information (a position on an associated coordinate system, [0118]) which are acquired through the network (the device control procedure creating module 324 acquires the device information, [0096]), and for storing the definition information in the storage section (stores the acquired device information in the device setting information database 321, [0096]);

a screen generation section (3D display processing module) for making the display section display the operation and monitor screen of the system component nodes (3D display processing module 321 for implementing the capability of displaying a network topology situation for a network manager, [0089]) from the definition information in the storage section (a database control module 323 for implementing database control functions for controlling necessary information for producing displays on the management console 31, [0091]); and

a control function providing section (e.g. database control module 323) for reading information defining an operation of the system component node from the storage section (for implementing database control functions for controlling necessary information for producing displays on the management console 31), and for outputting

the read information to the communication section (a SNMP manager module 325 for actually performing control operations to the controlled device 34) [0091].

However, Miyake does not explicitly disclose component nodes generating a unique global address or transmitting the generated global address, attribute information of the system component node and installation position information of the system component node, to the network.

Forslöw teaches a plurality of system component nodes (mobile clients) each having a communication section for generating a unique global address by the system component node itself upon connection to the network (the mobile client 20 can alternatively generate its own IP address, column 19 lines 9-10), and for transmitting the generated global address (network address identifier), attribute information of the system component node (e.g. response to the challenge) (the mobile client 20 includes its network address identifier (NAI) and a response to the challenge in the registration request, column 20 lines 10-12) and installation position information of the system component node (service location protocols between the mobile client 20 and the mobile service router 10, column 9 lines 44-46), to the network.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize self address generation and transmission of device information by the managed device in the system/method of Miyake as suggested by Forslöw in order to alleviate the managing node from having to assign addresses for each added node and using resources to acquire the required information. One of ordinary skill would recognize that obtaining this particular information is essential in

managing a secure network, but that requiring the managing node to monitor, operate and gather the data increases the potential causes for errors in the system. One would be motivated to combine these teachings because automatically providing the management system with the necessary information would result in continued efficiency of management over a network including mobile devices to be managed, thus expanding the capabilities of the system.

However, although Miyake-Forslöw teach that the controlled device can be any network apparatus, Miyake-Forslöw do not explicitly disclose the plurality of system component nodes include at least one controller, at least one sensor and at least one actuator where the controller operates the actuator based on data from the sensor.

Petite teaches wherein a plurality of system component nodes include at least one controller, at least one sensor and at least one actuator where the controller operates the actuator based on data from the sensor (local controller 110 provides power, formats and applies data signals from each of the sensors to predetermined process control functions, and returns control signals as appropriate to the system actuators, column 5 lines 25-30).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize controlling an actuator based on signals received from a sensor in the system/method of Miyake-Forslöw as suggested by Petite in order to apply the techniques for managing a network to a wider range of applications, including controlling and monitoring a plant. One of ordinary skill would recognize that controlling an actuator based on signals received from a sensor is well known in the art. One

would be motivated to combine these teachings because the controller can determine network conditions and parameters based on the signals inputted by the sensor and control the actuator to respond accordingly.

Regarding claim 3, Miyake teaches the industrial automation control system as claimed in claim 1, wherein the definition information (device setting information) includes the global address (object ID, [0118]), an installation position (a position on an associated coordinate system, [0118]), a tag (object identifier, [0118]), a control function (notifies the manager 32 of the acquired MIB value (step 851); the result is registered in the device setting information database, [0103]) and a configuration of the operation and monitor screen of the system component node (e.g. the object ID of another object to be connected to an object on each network layer in the network, [0118]).

Regarding claim 4, Miyake teaches the industrial automation control system as claimed in claim 1, wherein the definition information generation section (the device control procedure creating module 342) has an attribute information determination section (MIB value acquisition sequence) for determining validity of the attribute information (confirming whether or not a new controller device exists) [0103].

Regarding claim 5, Miyake teaches the industrial automation control system as claimed in claim 1, wherein the attribute information includes at least one of a type (e.g. types of

the devices, [0103]), a manufacturer, a model and a serial number of the system component node.

Regarding claim 6, Forslöw teaches the industrial automation control system as claimed in claim 1, wherein each of the communication section of the system component node (mobile client) and the communication section of the management node (e.g. configuration server) has an address generation section for generating a unique global address (the mobile client 20 can alternatively generate its own IP address, column 18 lines 9-10; the configuration server 146 maintains an IP address pool from which it can allocate addresses, column 18 lines 1-2).

Regarding claim 7, Forslöw teaches the industrial automation control system as claimed in claim 1, wherein each of the communication section of the system component node (mobile client) and the communication section of the management node (e.g. MSR) performs packet communication (e.g. the client's MSR 10 can handle the packets that are sent from the mobile client 20, column 10 lines 54-56).

Regarding claim 8, Petite teaches the industrial automation control system as claimed in claim 7, wherein the communication section has an authentication section for adding authentication data to a header of a packet (Bytes 31 and 32 are packet check sum bytes, column 15 line 29), and determining validity of the received packet according to the authentication data added to the packet (the packet check sum bytes are used by

the system to indicate when system messages are received with errors, column 15 lines 30-31).

Regarding claim 9, Forslöw teaches the industrial automation control system as claimed in claim 7, wherein the communication section has a cryptograph processing section for encrypting a packet (IPSec component 100a is performing per packet authentication (AH) and/or encryption (ESP) for the traffic crossing the MVPN tunnel, column 14 lines 45-49).

Regarding claim 11, Forslöw teaches the industrial automation control system as claimed in claim 6, wherein Internet protocol specification IPv6 is used as a communication protocol for connecting to the network (e.g. in an IPv6 network, column 18 lines 8-10).

Regarding claim 12, Forslöw teaches the industrial automation control system as claimed in claim 1, wherein the system component node (mobile client) has a position detection section for detecting the installation position (e.g. the mobile client 20 may use a spatial location protocol to determine the geographic position of itself, column 12 lines 24-27).

Regarding claim 14, Miyake teaches the industrial automation control system as claimed in claim 1, wherein the network has a switching hub (ATM switch 1012 of FIG. 10, [0108], and

the system component node (e.g. 1015a-1015f of FIG. 10) is connected to the switching hub (FIG. 10).

Regarding claim 15, Miyake teaches a control system established through a network, the control system comprising:

a management node (31, 32, and 33 of FIG. 3) for monitoring and operating the system component nodes (34 of FIG. 3) through the network and managing control of the whole control system (FIG. 3 generally illustrates the configuration of a network operation/management system, [0088]), wherein

the management node includes:

a communication section for performing communication through the network (e.g. a communication I/O interface controller 614, [0100]);

a storage section for storing definition information of the system component nodes (device setting information) (e.g. 321 of FIG. 3, [0088]);

a display section for displaying an operation and monitor screen (e.g. display device 56 of FIG. 5, [0099]);

a definition information generation section (device control procedure creating module 324, [0096]) for generating the definition information (device setting information) based on the global address (object ID, [0118]), the attribute information (e.g. types of

the devices, [0103]) and the position information (a position on an associated coordinate system, [0118]) which are acquired through the network (the device control procedure creating module 324 acquires the device information, [0096]), and for storing the definition information in the storage section (stores the acquired device information in the device setting information database 321, [0096]);

a screen generation section (3D display processing module) for making the display section display the operation and monitor screen of the system component nodes (3D display processing module 321 for implementing the capability of displaying a network topology situation for a network manager, [0089]) from the definition information in the storage section (a database control module 323 for implementing database control functions for controlling necessary information for producing displays on the management console 31, [0091]); and

a control function providing section (e.g. database control module 323) for reading information defining an operation of the system component node from the storage section (for implementing database control functions for controlling necessary information for producing displays on the management console 31), and for outputting the read information to the communication section (a SNMP manager module 325 for actually performing control operations to the controlled device 34) [0091].

However, Miyake does not explicitly disclose component nodes generating a unique global address or transmitting the generated global address, attribute information of the system component node and installation position information of the system component node, to the network.

Forslöw teaches a plurality of system component nodes (mobile clients) each having a communication section for generating a unique global address by the system component node itself upon connection to the network (the mobile client 20 can alternatively generate its own IP address, column 19 lines 9-10), and for transmitting the generated global address (network address identifier), attribute information of the system component node (e.g. response to the challenge) (the mobile client 20 includes its network address identifier (NAI) and a response to the challenge in the registration request, column 20 lines 10-12) and installation position information of the system component node (service location protocols between the mobile client 20 and the mobile service router 10, column 9 lines 44-46), to the network.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize self address generation and transmission of device information by the managed device in the system/method of Miyake as suggested by Forslöw in order to alleviate the managing node from having to assign addresses for each added node and using resources to acquire the required information. One of ordinary skill would recognize that obtaining this particular information is essential in managing a secure network, but that requiring the managing node to monitor, operate and gather the data increases the potential causes for errors in the system. One would be motivated to combine these teachings because automatically providing the management system with the necessary information would result in continued efficiency of management over a network including mobile devices to be managed, thus expanding the capabilities of the system.

However, although Miyake-Forslöw teach that the controlled device can be any network apparatus, Miyake-Forslöw do not explicitly disclose wherein the plurality of system component nodes include at least one controller and at least one of a sensor and an actuator, wherein the controller has a self-learning section for learning more appropriate control function by performing transmission and reception to and from the sensor and the actuator, and transmits the learned control function to the management node, and the definition information of the management node generates the definition information according to the control function from the controller.

Petite teaches wherein the plurality of system component nodes include at least one controller, and at least one of a sensor and an actuator (local controller 110 provides power, formats and applies data signals from each of the sensors to predetermined process control functions, and returns control signals as appropriate to the system actuators, column 5 lines 25-30),

wherein the controller has a self-learning section for learning more appropriate control function by performing transmission and reception to and from the sensor and the actuator (sensor 612 wherein the current utility meter operational status and current utility meter usage total is transmitted via functional codes along with a transceiver identification code in a manner previously described by transmitter 614 to stand-along transceiver 221, column 12 lines 35-39), and transmits the learned control function to the management node (stand-alone transceiver 221 further processes and transmits the encoded data to local gateway 210 which translates the data packet information into TCP/IP format for transfer across WAN 230 to server 260, column 12 lines 39-43), and

the definition information generation section of the management node generates the definition information according to the control function from the controller (server 260 collects and formats the utility meter information for viewing and or retrieval upon client demand in a manner previously described, column 12 lines 43-45).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize a controller which receives network information from network components and transmits this information to a management server in the system/method of Miyake-Forslöw as suggested by Petite in order to apply the techniques for managing a network to a wider range of applications, including controlling and monitoring a plant.. One would be motivated to combine these teachings because it would allow for distributed networks to be inexpensively controlled and monitored.

Regarding claim 16, Miyake teaches the industrial automation control system as claimed in claim 1, wherein the management node performs communication with the system component node through the network (e.g. the SNMP manager or any alternative means issues a SNMP command or an alternative command to the respective controlled devices, [0105]).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake-Forslöw-Petite in view of Gandhi et al. (US 7,085,814).

Regarding claim 10, Forslöw teaches the industrial automation control system as claimed in claim 7, wherein the communication section of the system component node (mobile client node) multicasts a packet to all of the management node and the system component nodes connected to the system (the mobile client may also broadcast or multicast an advertisement solicitation), and

the communication section of the management node receives the multicasted packet and sends a response to the received packet to the system component node (answered by any foreign agent that receives it, column 4 line 25-27).

However, Miyake- Forslöw-Petite do not explicitly disclose a generated global address as a source address.

Gandhi teaches a generated global address (URLs are a format for expressing web addresses, column 11 lines 57-58) as a source address (a Control Point uploads the Device Description and extracts the URLs of the Servers running on the Controlled Device, column 12 lines 38-40).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize including an address in a transmitted packet in the system/method of Miyake- Forslöw-Petite as suggested by Gandhi in order to provide an identification of the sender. One of ordinary skill would recognize that including a source address in a packet is standard for most protocols. One would be motivated to combine these teachings because including this information, particular in a broadcast or

multicast, conveys necessary information to the receiver regarding the transmitted data and how to reply if necessary.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake-Forslöw-Petite in view of Kim (US 6,670,909).

Regarding claim 13, Petite teaches the industrial automation control system as claimed in claim 12, wherein the central computer may be informed of transceiver physical locations after permanent installation (column 3 lines 17-20), and wherein radio frequency is used for transmitting and receiving signals (column 6 lines 4-8).

However, Miyake-Forslöw-Petite do not explicitly disclose wherein position detection section detects the position using radio waves or ultrasonic waves.

Kim teaches wherein the position detection section detects the position using radio waves or ultrasonic waves (capabilities of radio technology also enable the positions of the sensors 902 to be determined, column 21 lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize radio technology to determine the position of a sensor in the system/method of Miyake-Forslöw-Petite as suggested by Kim in order for the sensor to be able to calculate its current position. One would be motivated to combine these teachings because it would allow for accurate monitoring of the location of mobile network components.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MADHU KHANNA whose telephone number is (571)270-3629. The examiner can normally be reached on Monday-Thursday 8:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. K./
Examiner, Art Unit 2451
/Salad Abdullahi/
Primary Examiner, Art Unit 2457